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(51) International Patent Classification 5 : A01N 35/08, 43/50, 43/54 A01N 51/00		A1	(11) International Publication Number: WO 91/17659 (43) International Publication Date: 28 November 1991 (28.11.91)
<p>(21) International Application Number: PCT/US91/03118</p> <p>(22) International Filing Date: 10 May 1991 (10.05.91)</p> <p>(30) Priority data: 524,738 17 May 1990 (17.05.90) US</p> <p>(60) Parent Application or Grant (63) Related by Continuation US Filed on 524,738 (CIP) 17 May 1990 (17.05.90)</p> <p>(71) Applicants (<i>for all designated States except US</i>): E.I. DU PONT DE NEMOURS AND COMPANY [US/US]; 1007 Market Street, Wilmington, DE 19898 (US). UNIVERSITY OF SOUTH CAROLINA [US/US]; Osborne Administration Building, Columbia, SC 29208 (US).</p> <p>(72) Inventors; and (75) Inventors/Applicants (<i>for US only</i>) : CHAPMAN, James, Mood [US/US]; 1111 Watermark Place, Columbia, SC 29210 (US). KOLLMEYER, Willy, Dietrich [US/US]; 28 Raphael Road, Hockessin, DE 19707 (US). KOSH, Joseph, William [US/US]; 105 Nut Tree Court, Lexington, SC 29072 (US). McCANN, Stephen Frederick [US/US]; 2012 Christiana Meadows, Bear, DE 19702 (US). SOWELL, Joseph, Walter [US/US]; 1704 Blackbird Drive, West Columbia, SC 29169 (US). ZWICK, Faith, Blersch [US/US]; 1228 Paper Mill Road, Newark, DE 19711 (US).</p>		<p>(74) Agents: COSTELLO, James, A. et al.; E.I. du Pont de Nemours and Company, Legal/Patent Records Center, 1007 Market Street, Wilmington, DE 19898 (US).</p> <p>(81) Designated States: AT (European patent), BE (European patent), CH (European patent), DE (European patent), DK (European patent), ES (European patent), FR (European patent), GB (European patent), GR (European patent), IT (European patent), JP, KR, LU (European patent), NL (European patent), SE (European patent), US.</p> <p>Published <i>With international search report. Before the expiration of the time limit for amending the claims and to be republished in the event of the receipt of amendments.</i></p>	
<p>(54) Title: ARTHROPODICIDAL NITROETHYLENES AND NITROGUANIDINES</p> <p style="text-align: center;"> (I) </p> <p>(57) Abstract</p> <p>Arthropods are controlled in agronomic and nonagronomic environments by contacting them or their environment with an effective amount of a compound of formula (I), wherein R¹ to R⁴, X, A, and Z are as defined in the text, including arthropodicidal compositions containing said compound(s).</p>			

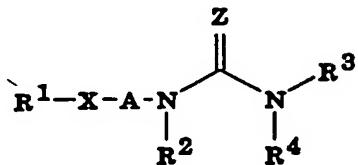
CLAIMS

What is claimed is:

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1. An arthropodicidal composition comprising, as active ingredient, a compound of the formula:

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I

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in an amount effective to control planthoppers and leafhoppers, and a carrier therefor, wherein:

Z is selected from the group CHNO₂ and NNO₂;

X is selected from S(O)_n:

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A is selected from the group C₁-C₄ alkylene optionally substituted with C₁-C₃ alkyl, C₂-C₃ alkoxy carbonyl, halogen and CN;

R¹ is selected from the group C₁-C₄ alkyl, C₁-C₄ haloalkyl, C₃-C₆ cycloalkyl and C₄-C₆ cycloalkylalkyl;

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n is 0, 1 or 2;

R² and R³ are independently selected from the group H, CH₂CN, C₁-C₄ alkyl, CHO, C₂-C₄ alkylcarbonyl, C₂-C₃ alkoxy carbonyl C₂-C₄ alkoxyalkyl, C₃-C₆ dialkoxyalkyl, C₁-C₃ alkoxy, C₁-C₃ alkylsulfonyl, C₃-C₄ alkenyl, C₃-C₄ alkynyl, C₁-C₄ alkylamino, C₂-C₄ dialkylamino and benzyl substituted with R⁵;

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R⁴ is selected from the group C₁-C₄ alkyl, C₁-C₄ haloalkyl, C₃-C₆ cycloalkyl and C₄-C₆ cycloalkylalkyl; or

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R² and R⁴ can be taken together as C₂-C₃ alkylene or C₂-C₃ alkenylene each optionally substituted with 1-4 C₁-C₂ alkyl; and

5 R⁵ is selected from the group halogen, C₁-C₂ alkyl, C₁-C₂ haloalkyl, C₁-C₂ alkoxy, C₁-C₂ thioalkyl, C₁-C₂ haloalkyl, C₁-C₂ haloalkoxy, NO₂ and CN.

10 2. A composition according to Claim 1 wherein Z is CHNO₂.

3. A composition according to Claim 1 wherein Z is NNO₂.

15 4. A composition according to Claim 2 wherein:
A is CH₂CH₂;

R¹ is selected from the group C₁-C₄ alkyl;
R² and R³ are independently selected from the group H,
C₁-C₄ alkyl, C₂-C₃ alkoxy carbonyl and C₂-C₄ alkyl carbonyl; and

20 R⁴ is selected from the group C₁-C₄ alkyl.

25 5. A composition according to Claim 2 wherein R² and R⁴ are taken together and independently selected from the group C₂-C₃ alkylene and C₂-C₃ alkenylene, each optionally substituted by 1-4 C₁-C₄ alkyl.

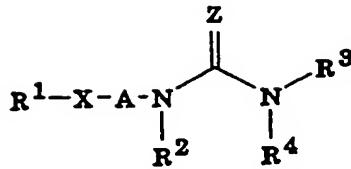
30 6. A composition according to Claim 4 wherein X is S.

7. A composition according to Claim 5 wherein X is S.

35 8. A method for controlling planthoppers and leafhoppers which comprises applying to them or to their environment an effective amount of a compound of the formula:

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wherein:

- 10 Z is selected from the group CHNO₂ and NNO₂;
 X is selected from S(O)_n;
 A is selected from the group C₁-C₄ alkylene optionally substituted with C₁-C₃ alkyl, C₂-C₃ alkoxy carbonyl, halogen and CN;
- 15 R¹ is selected from the group C₁-C₄ alkyl, C₁-C₄ haloalkyl, C₃-C₆ cycloalkyl and C₄-C₆ cycloalkylalkyl;
 n is 0, 1 or 2;
 R² and R³ are independently selected from the group H, CH₂CN, C₁-C₄ alkyl, CHO, C₂-C₄ alkylcarbonyl, C₂-C₃ alkoxy carbonyl C₂-C₄ alkoxyalkyl, C₃-C₆ dialkoxyalkyl, C₁-C₃ alkoxy, C₁-C₃ alkylsulfonyl, C₃-C₄ alkenyl, C₃-C₄ alkynyl, C₁-C₄ alkylamino, C₂-C₄ dialkylamino and benzyl substituted with R⁵;
- 20 R⁴ is selected from the group C₁-C₄ alkyl, C₁-C₄ haloalkyl, C₃-C₆ cycloalkyl and C₄-C₆ cycloalkylalkyl; or
 R² and R⁴ can be taken together as C₂-C₃ alkylene or C₂-C₃ alkenylene each optionally substituted with 1-4 C₁-C₂ alkyl; and
- 25 R⁵ is selected from the group halogen, C₁-C₂ alkyl, C₁-C₂ haloalkyl, C₁-C₂ alkoxy, C₁-C₂ thioalkyl, C₁-C₂ halothioalkyl, C₁-C₂ haloalkoxy, NO₂ and CN.

9. A method according to Claim 8 wherein Z is CHNO₂.

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10. A method according to Claim 8 wherein Z is NNO₂.

11. A method according to Claim 9 wherein:

5 A is CH₂CH₂;

R¹ is selected from the group C₁-C₄ alkyl;

R² and R³ are independently selected from the group H,
C₁-C₄ alkyl, C₂-C₃ alkoxy carbonyl and C₂-C₄
alkyl carbonyl; and

10 R⁴ is selected from the group C₁-C₄ alkyl.

12. A method according to Claim 9 wherein R² and R⁴ are taken
together and independently selected from the group C₂-C₃ alkylene and
C₂-C₃ alkenylene, each optionally substituted by 1-4 C₁-C₄ alkyl.

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13. A method according to Claim 11 wherein X is S.

14. A method according to Claim 12 wherein X is S.

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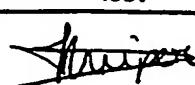
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INTERNATIONAL SEARCH REPORT

International Application No.

PCT/US 91/03118

I. CLASSIFICATION OF SUBJECT MATTER (If several classification symbols apply, indicate all) ⁶			
According to International Patent Classification (IPC) or to both National Classification and IPC			
Int.C1.5 A 01 N 51/00	A 01 N 35/08	A 01 N 43/50	A 01 N 43/54
II. FIELDS SEARCHED			
Minimum Documentation Searched ⁷			
Classification System	Classification Symbols		
Int.C1.5	A 01 N		
Documentation Searched other than Minimum Documentation to the Extent that such Documents are Included in the Fields Searched ⁸			
III. DOCUMENTS CONSIDERED TO BE RELEVANT⁹			
Category ¹⁰	Citation of Document, ¹¹ with indication, where appropriate, of the relevant passages ¹²	Relevant to Claims No. ¹³	
X	GB,A,1483633 (SHELL) 24 August 1977, see claims 1,15-18; page 4, lines 113-118 (cited in the application) ---	1,2,5,7 ,8,9,12 ,14	
X	FR,A,2322849 (SHELL) 1 April 1977, see claims 2,5 & US-A-4 025 529 (cited in the application) ---	1,2,4-9 ,11-14	
X	EP,A,0302389 (TAKEDA CHEMICAL INDUSTRIES) 8 February 1989, see claim 12, page 3, line 5 - page 5, line 39; page 42, line 31 (cited in the application) ---	1,2,8,9	
X,P	EP,A,0381130 (TAKEDA CHEMICAL INDUSTRIES) 8 August 1990, see page 5, formula V; page 6, lines 13-18; page 20, lines 1-3 ---	1,2,8,9 -/-	
* Special categories of cited documents : ¹⁰ "A" document defining the general state of the art which is not considered to be of particular relevance "E" earlier document but published on or after the international filing date "L" document which may throw doubts on priority claim(s) or which is cited to establish the publication date of another citation or other special reason (as specified) "O" document referring to an oral disclosure, use, exhibition or other means "P" document published prior to the international filing date but later than the priority date claimed			
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IV. CERTIFICATION			
Date of the Actual Completion of the International Search	Date of Mailing of this International Search Report		
27-08-1991	04 OCT 1991		
International Searching Authority	Signature of Authorized Officer		
EUROPEAN PATENT OFFICE	Mme N. KUIPER 		

III. DOCUMENTS CONSIDERED TO BE RELEVANT (CONTINUED FROM THE SECOND SHEET)

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A	EP,A,0254859 (NIHON TOKUSHU NOYAKU SEIZO) 3 February 1988, & US-A-4 806 553 (cited in the application) -----	

**ANNEX TO THE INTERNATIONAL SEARCH REPORT
ON INTERNATIONAL PATENT APPLICATION NO.**

US 9103118
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This annex lists the patent family members relating to the patent documents cited in the above-mentioned international search report. The members are as contained in the European Patent Office EDP file on 19/09/91. The European Patent Office is in no way liable for these particulars which are merely given for the purpose of information.

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